General

Guideline Title

Diabetes management at camps for children with diabetes.

Bibliographic Source(s)

American Diabetes Association. Diabetes management at camps for children with diabetes. Diabetes Care. 2012 Jan;35(Suppl 1):S72-5. [9 references] PubMed

Guideline Status

This is the current release of the guideline.

Recommendations

Major Recommendations

The recommendations for diabetes management of children at a diabetes camp are not significantly different from what has been outlined by the American Diabetes Association as the standards of care for people with type 1 diabetes or for children with diabetes in the school or day care setting. In general, the diabetes camping experience is short term and is most often associated with increased physical activity and more controlled access to food relative to that experienced at home. Thus, while away at camp, glycemic control goals are more related to avoiding blood glucose extremes than optimizing overall glycemic control. The management protocol aims to balance insulin dosage with activity level and food intake so that blood glucose levels stay within a safe target range, especially with respect to the prevention and management of hypoglycemia.

Each camper should have a standardized comprehensive health history form completed by his/her family and a health evaluation form completed by the diabetes care provider that details the camper's past medical history, immunization record, and diabetes regimen. The home insulin regimen should be recorded for each camper, including type(s) of insulin used, number and timing of insulin injections (if on shots), and insulin pump basal, bolus, and correction dose settings (if on an insulin pump). Records for insulin dosages and blood glucose values for the week immediately before camp should be provided as a baseline. Additional medical information, such as prior diabetes-related illnesses and hospitalizations, history of severe hypoglycemia, previous hemoglobin A1C levels, other medications, significant medical conditions, and psychological issues also should be available to camp personnel and reviewed with diligence by those responsible for the health and well-being of the individual camper.

During camp, a record of the camper's diabetes care progress should be documented daily. All blood glucose values and insulin dosages should be recorded in a format that allows for review and analysis to determine whether alterations in the diabetes regimen are required during the camp stay. A record of the degree of activity and food intake may also be helpful in determining subsequent alterations in the diabetes regimen. It is imperative that the medical staff have advanced knowledge about the exercise schedule and the meal plan at camp so that they can make appropriate insulin dosage adjustments. Inadvertent schedule delays or schedule changes (such as for rainy weather) can have a significant impact on the risk of hypoglycemia as insulin dosing at the previous meal takes into account the planned activities. If a low-, moderate-, or high-level activity event is originally planned, a replacement activity with an equivalent activity level should be substituted when possible.

To ensure safety and optimal diabetes management, blood glucose testing materials and treatment supplies for hypoglycemia should be readily available to campers at all times. Multiple blood glucose determinations should be made and recorded throughout each 24-h period: before meals; at bedtime; before, after, or during prolonged and strenuous activity; in the middle of the night, when indicated for prior hypoglycemia; after an insulin pump site change; and after extra doses of insulin. Use of a continuous glucose monitoring system (CGMS) does not preclude the need to test finger-stick blood glucose.

Because exercise may still impact blood glucose 12 to 18 h after completion, campers who have repeated lows during exercise may also need nocturnal testing. Campers with a bedtime blood glucose level <100 mg/dL and campers on an insulin pump with a blood glucose >240 mg/dL should have their blood glucose rechecked overnight. The intervention for campers with an overnight blood glucose level <100 mg/dL should be determined based on their insulin regimen and risk for nocturnal hypoglycemia. Campers on insulin pumps with a blood glucose >240 mg/dL should follow an established pump protocol for ketone testing and changing of the insulin pump site. Campers should be encouraged to check blood glucose levels at times other than the routine times if they have symptoms of hypo-/hyperglycemia or if they have other physical complaints. These recommendations imply that there is adequate staffing and that they have received training in blood glucose monitoring procedures as well as the indications and treatment protocols for hypo-/hyperglycemic events.

Every attempt should be made to follow the home insulin regimen of each camper as closely as possible. If a camper's blood glucose record prior to camp indicates tight glucose control and a low activity level, it may be advisable to decrease the insulin dosage in anticipation of the increased activity. Supervision of each and every insulin administration is important to ensure camper safety and compliance with the prescribed insulin dose. Hypoglycemia may occur at the beginning of camp because of increased physical activity, failure to have free access to food, or other conditions such as a major change in altitude. Other alterations in insulin dosage may need to be made for extreme physical activity, such as prolonged hikes or active water sports.

A rising percentage (and often a majority) of children at camp manage their diabetes with an insulin pump, with almost all of the remaining children on a subcutaneous basal/bolus insulin regimen. The camp medical director and other appropriate camp staff should be familiar with the programming of insulin pumps, the replacement of insulin pump infusion sets, and insulin adjustments using a basal/bolus insulin regimen or an insulin pump. The medical staff should ensure that adequate backup pump supplies, including extra batteries, reservoirs, and catheter sets, are available for the duration of camp.

If major alterations of a camper's regimen appear to be indicated, such as adding an additional insulin injection(s) or changing an insulin type, it is important to discuss this with the camper and the family in addition to the child's local diabetes care provider before the change is made. A record of the blood glucose values, insulin doses, and other medical care provided at camp, with an additional copy for the family to share with their primary diabetes team (if they choose), should be available to (and discussed with) the family at the end of camp. For campers returning home by bus or carpool, the record should be sent with the camper or mailed to his/her family. Parents and campers should be advised to return to their precamp regimen once they are home, unless the alterations appear to significantly improve glycemic control. In this circumstance, the family should seek the guidance of its primary diabetes team.

Dietary planning at camp should be overseen by a registered dietitian. Meals should be given at set times each day and should accommodate special dietary needs, when needed, especially those related to food allergies and the increasing incidence of celiac disease in the diabetic population. Snacks between meals may be appropriate to prevent hypoglycemia, especially in the youngest campers who may not recognize their hypoglycemic symptoms. These meals and snacks should be balanced, and their composition (specifically the carbohydrate content) should be made known to campers and staff. Carbohydrate counting is optimally presented in grams and should be as exact as possible (not rounded to the nearest complete serving or 15 g). The carbohydrate component of food should be taught to campers, according to their developmental level, to enable them to learn how to balance food and activity. Supervision of the food intake of children by counselors ensures that the campers are consuming adequate nutrition.

A formal relationship with a nearby medical facility should be secured for each camp so that camp medical staff has the ability to refer to this facility for prompt treatment of medical emergencies. (The American Camp Association requires the notification of all emergency medical support systems local to the camp.) If the camp is located in a remote area, an arrangement should be made with a medical helicopter or fixed-wing aircraft to provide rapid transport if necessary.

Universal precautions including Occupational Safety & Health Association (OSHA) regulations, Clinical Laboratory Improvement Amendments (CLIA) standards, and state regulations must be followed by all, with gloves worn for all procedures that involve blood draws and appropriate containers placed throughout the camp to dispose of sharps without hazard. Retractable single-use lancets and glucose meters in which blood does not touch the machine itself are preferable for group testing. No lancing device that can be reset and used again should be available to campers. Retractable insulin syringe/pen needles may be considered to further reduce the risk of needle sticks among campers and staff. Insulin pens are for single person use and should never be shared between two individuals. Care should also be taken to ensure that insulin pumps are individually labeled so that when they are disconnected (for swimming or bathing), the proper pump is reconnected to the proper camper to prevent fluid

contamination and improper insulin administration. Whenever possible, blood glucose meters should be assigned to an individual person due to the risk of blood-borne pathogen contamination from blood on the surface of the meter. If blood glucose meters must be shared, the device must be cleaned and disinfected after every use, per the manufacturer instructions, to prevent potential cross contamination of infectious agents. Glucose meters should be calibrated regularly using control solution to verify accuracy (frequency should be per the manufacturer instructions).

Medical Staff Composition and Staff Training

It is imperative that each camp have a medical director who is a physician with expertise in managing type 1 and type 2 diabetes. The medical director or his/her on-site licensed designee ultimately is responsible for the daily review of blood glucose results, insulin logs, and other prescribed medications of all campers and staff with diabetes to make appropriate adjustments. The medical director or the on-site licensed designee also is responsible for providing guidance in all medical emergencies and should ensure that the medical program is integrated into the overall camping experience. One licensed physician must be on site at all times for resident camp programs and available on call at all times for a day camp program.

The medical staff can be comprised of licensed healthcare professionals and nonhealthcare professionals with an interest in diabetes. Physicians, medical residents, midlevel providers (physician assistants and advanced practice nurses), diabetes educators, pharmacists, and nurses should also be encouraged to participate. In addition, registered dietitians with expertise in diabetes should have input into the design of the menu and the education program. It is beneficial to include some medical, nursing, pharmacy, physician assistant, nurse practitioner, and dietetic students as volunteer counselors or junior medical staff to learn about diabetes as well as the needs of children with a chronic disease.

All camp staff, including medical, nursing, nutrition, and other volunteer or paid staff, should undergo background checks to ensure the appropriateness of their working with children. All staff should receive training concerning routine diabetes management, issues related to lifestyle modification for type 2 diabetes, and the treatment of diabetes-related emergencies (hypoglycemia or ketosis) before camp begins. Camp policies and job descriptions for staff should be understood and available in print before the start of camp. All camp staff should be familiar with the signs and symptoms of hypo-/hyperglycemia, indications for blood glucose testing, and treatment of hypoglycemia, including the administration of glucagon to treat severe hypoglycemia. Competency testing of these skills for staff medically responsible for the campers is strongly suggested. All diabetes supplies should be monitored and distributed by responsible medical staff.

Reliable communication methods to allow contact with on-site medical staff should exist in every activity area. Supplies for routine first aid and for the treatment of intercurrent illnesses, such as allergies, asthma, sore throats, diarrhea/vomiting, and minor trauma, should be available. All medical treatment should be recorded in both the camper's file and in the yearly camp medical log.

Treatment of Diabetes-related Emergencies

Hypoglycemia

Glucagon or intravenous glucose solutions must be available for administration by trained camp personnel for treatment of severe hypoglycemia. All possible measures should be taken to avert severe hypoglycemia. These measures may include nighttime blood glucose testing, decreasing insulin dosages for extreme activity, and altering insulin regimens for campers with prior severe hypoglycemia. Extra snacks should be provided to children with blood glucose levels <100 mg/dL at bedtime. Additional snacks or modifications of insulin for children with blood glucose levels <80 mg/dL should also be considered.

A set protocol for the treatment of mild-to-moderate hypoglycemia with oral glucose at other times should be followed so that hypoglycemia is consistently managed. Repeat blood glucose testing should be performed within 15 to 20 minutes to ensure resolution of hypoglycemia.

Ketosis

It may be possible to treat mild-to-moderate diabetic ketosis at camp. Urine or blood should be measured for the presence of ketones if a camper has persistent hyperglycemia (blood glucose level >240 mg/dL [13.3 mmol/L]) or if a camper has an intercurrent illness, regardless of blood glucose level. Oral or intravenous hydration (if vomiting) should be administered, and adequate insulin should be given to reverse ketosis. A flow sheet should be produced to document the progress of the treatment regimen. Referral to an appropriate medical facility is required if vomiting and ketosis do not resolve promptly.

Written Camp Management Plan

A written plan that includes camp policies and medical management procedures must be available at camp. It should be written or reviewed by the camp medical director in collaboration with others, such as the camp program director, members of the camp oversight and/or policy committees, local pediatric endocrinologists and diabetes educators, etc. The plan must adhere to the American Diabetes Association's standards of medical care and the American Camp Association accreditation standards. All medical staff should review this management plan before camp begins.

The written medical management plan should include information about:

- General diabetes management
- Insulin injections/pump therapy
- Blood glucose monitoring and ketone testing
- Nutrition, timing, and content of meals and snacks
- Routine and special activities
- Hypoglycemia and treatment
- Hyperglycemia/ketosis and treatment
- Medical forms
- Assessment and treatment of intercurrent illness
- Pharmacy compendium
- Universal precautions and policies for needle sticks and handling of infectious waste
- Psychological issues at camp
- Quality control of medical equipment according to OSHA and CLIA standards
- Incident/accident reporting
- When to notify parents/guardians, primary care physician, and diabetes care provider
- Policies for camp closure and returning home

In addition, camp policies should cover emergency procedures (e.g., medical and natural disasters), out-of-camp excursions, and the prevention of physical, sexual, and psychological abuse. A risk management plan should also be developed and understood by all camp staff. The ADA's *Camp Implementation Guide Modules* includes a variety of resources including sample policies, job descriptions, and medical forms.

Diabetes Education and Psychological Issues

The camp setting is an ideal place for teaching diabetes self-management skills. Education programs should be developmentally appropriate. Examples of educational topics suitable for the camp setting include:

- Blood glucose monitoring
- Recognition and management of hypo-/hyperglycemia and ketosis
- Insulin types and administration techniques
- Carbohydrate counting
- Insulin dosage adjustment based on nutrition and activity schedules
- Insulin pump trouble shooting and problem solving
- The importance of diabetes control
- Healthy lifestyles issues, including integration of healthy eating, physical activity, and relaxation
- Problem-solving skills for caring for diabetes at home versus camp
- Life skills for independent living
- Stress management and coping skills
- Sexual health and preconception issues
- Diabetes complications
- New therapies including technologies

Medical personnel with the aid of on-site psychologists/social workers, if available, should aim to improve the psychological well-being of campers. These staff members should be willing to address specific and general psychosocial issues and be able to offer suggestions for subsequent follow-up if indicated. Individualized attention may be needed for campers with type 2 versus type 1 diabetes.

Research at Camp

Clinical research is often performed and encouraged at diabetes camps. However, if such projects are to be done, they must not interfere with the integrity of the camping program. All research conducted in the camp setting should be minimally invasive to the camping experience. All studies should be approved by an institutional review board in good standing and by the camp medical and program director before the camping session. Parents and campers must be provided the consent form, a summary/synopsis of the research protocol, and the ability to contact the principal investigator before consenting to enter the research study. Informed consent from parents or guardians and assent from the camper must be obtained, preferably before arrival at camp.

Other

At times, industries related to diabetes may wish to have a presence at camp. Camp medical staff and administrative personnel should develop policies for visits from industries while camp is in session. Industry representatives seeking to have a presence at camp should be subject to the same background checks and standards outlined by the ADA. Employees of industries should be encouraged to participate at camp for their expertise, ability to educate others, and added resources, while understanding that their role is to support the experience of the campers rather than to solicit or promote their individual product.

Conclusions

Camps for children and youth focused on diabetes are invaluable. Most camps have a high return rate for campers, many of whom go on to become counselors, medical professionals, staff, and role models for campers. Thus, it is reasonable to assume that they have benefited not only from the camp experience but also from the friendships that have developed from being in an environment where the norm is to have diabetes. Providing high-standard diabetes care is imperative to maximize the experience offered by camps specialized for children with diabetes. Using the active camping environment as a teaching opportunity is an invaluable way for children with diabetes to gain skills in managing their disease within the supportive camp community.

Clinical Algorithm(s)

None provided

Scope

Disease/Condition(s)

- Type 1 diabetes mellitus
- Type 2 diabetes mellitus

Guideline Category

Counseling

Evaluation

Management

Prevention

Treatment

Clinical Specialty

Endocrinology

Family Practice

Nursing

Nutrition

Pediatrics

Pharmacology

Preventive Medicine

Psychology

Intended Users

Advanced Practice Nurses

Allied Health Personnel

Dietitians

Nurses

Pharmacists

Physician Assistants

Physicians

Psychologists/Non-physician Behavioral Health Clinicians

Social Workers

Students

Guideline Objective(s)

- To facilitate a traditional camping experience in a medically safe environment
- To enable children with diabetes to meet and share their experiences with one another while they learn to be more responsible for their condition

Target Population

Children and adolescent campers with diabetes

Interventions and Practices Considered

Evaluation

1. Use of a standardized comprehensive health history form with past medical history, immunization record, diabetes regimen
2. Record of type(s) of insulin used, number and timing of insulin injections or insulin pump basal, bolus, and correction dose settings
3. Record of insulin dosages and blood glucose values for the week immediately before camp
4. Record of prior diabetes-related illnesses and hospitalizations, history of severe hypoglycemia, previous hemoglobin A1C levels, other medications, significant medical conditions, and psychological issues

Management/Prevention/Treatment

1. Documentation of the camper's diabetes care progress at camp
2. Documentation of activity and food intake
3. Advanced planning of exercise schedule and meals at camp
4. Replacement activities if needed
5. Blood glucose testing timing and equipment
6. Need for additional blood glucose testing, including nocturnal testing
7. Glucagon for severe hypoglycemia
8. Treatment of medical emergencies (hypoglycemia, ketosis) using set protocols
9. Developmentally appropriate teaching of self-management skills
10. Addressing specific and general psychosocial issues

Staff Issues

1. Competency testing

2. Monitoring and distribution of diabetes supplies
3. Reliable communication with on-site staff
4. Adequate medical supplies at activity sites
5. Adequate maintenance of camper's and camp's medical files
6. Written medical management plan
7. Written emergency procedures plan
8. Managing clinical research at camp, including obtaining informed consent
9. Integrating industry support

Major Outcomes Considered

- Change in blood glucose levels with changing activity levels
- Change in blood glucose levels with changing nutrition
- Incidence of hypoglycemia
- Incidence of hyperglycemia
- Percent of campers who need changes to their treatment regimens

Methodology

Methods Used to Collect/Select the Evidence

Searches of Electronic Databases

Description of Methods Used to Collect/Select the Evidence

Not stated

Number of Source Documents

Not stated

Methods Used to Assess the Quality and Strength of the Evidence

Weighting According to a Rating Scheme (Scheme Given)

Rating Scheme for the Strength of the Evidence

American Diabetes Association's Evidence Grading System for Clinical Practice Recommendations

A

Clear evidence from well-conducted, generalizable randomized controlled trials (RCTs) that are adequately powered, including:

- Evidence from a well-conducted multicenter trial
- Evidence from a meta-analysis that incorporated quality ratings in the analysis

Compelling nonexperimental evidence (i.e., "all or none" rule developed by the Centre for Evidence-Based Medicine at Oxford)

Supportive evidence from well-conducted RCTs that are adequately powered, including:

- Evidence from a well-conducted trial at one or more institutions
- Evidence from a meta-analysis that incorporated quality ratings in the analysis

B

Supportive evidence from well-conducted cohort studies, including:

- Evidence from a well-conducted prospective cohort study or registry
- Evidence from a well-conducted meta-analysis of cohort studies

Supportive evidence from a well-conducted case-control study

C

Supportive evidence from poorly controlled or uncontrolled studies, including:

- Evidence from RCTs with one or more major or three or more minor methodological flaws that could invalidate the results
- Evidence from observational studies with high potential for bias (such as case series with comparison to historical controls)
- Evidence from case series or case reports

Conflicting evidence with the weight of evidence supporting the recommendation

E

Expert consensus or clinical experience

Methods Used to Analyze the Evidence

Systematic Review

Description of the Methods Used to Analyze the Evidence

Not stated

Methods Used to Formulate the Recommendations

Expert Consensus

Description of Methods Used to Formulate the Recommendations

Not stated

Rating Scheme for the Strength of the Recommendations

Not applicable

Cost Analysis

A formal cost analysis was not performed and published cost analyses were not reviewed.

Method of Guideline Validation

Internal Peer Review

Description of Method of Guideline Validation

This updated position statement was peer reviewed by the Professional Practice Committee in September, 2011, and approved by the Executive Committee of the American Diabetes Association in November, 2011.

Evidence Supporting the Recommendations

Type of Evidence Supporting the Recommendations

The type of supporting evidence is not specifically stated for each recommendation.

Benefits/Harms of Implementing the Guideline Recommendations

Potential Benefits

- Prevention of hyper- and hypoglycemia in camp settings
- Most camps have a high return rate for campers, many of whom go on to become counselors, medical professionals, staff, and role models for campers. Thus, it is reasonable to assume that they have benefited not only from the camp experience but also from the friendships that have developed from being in an environment where the norm is to have diabetes. Using the active camping environment as a teaching opportunity is an invaluable way for children with diabetes to gain skills in managing their disease within the supportive camp community.

Potential Harms

Not stated

Qualifying Statements

Qualifying Statements

Evidence is only one component of clinical decision-making. Clinicians care for patients, not populations; guidelines must always be interpreted with the needs of the individual patient in mind. Individual circumstances, such as comorbid and coexisting diseases, age, education, disability, and, above all, patients' values and preferences, must also be considered and may lead to different treatment targets and strategies. Also, conventional evidence hierarchies, such as the one adapted by the American Diabetes Association (ADA), may miss some nuances that are important in diabetes care. For example, while there is excellent evidence from clinical trials supporting the importance of achieving glycemic control, the optimal way to achieve this result is less clear. It is difficult to assess each component of such a complex intervention.

Implementation of the Guideline

Description of Implementation Strategy

An implementation strategy was not provided.

Institute of Medicine (IOM) National Healthcare Quality Report Categories

IOM Care Need

Living with Illness

Staying Healthy

IOM Domain

Patient-centeredness

Safety

Identifying Information and Availability

Bibliographic Source(s)

American Diabetes Association. Diabetes management at camps for children with diabetes. Diabetes Care. 2012 Jan;35(Suppl 1):S72-5. [9 references] PubMed

Adaptation

Not applicable: The guideline was not adapted from another source.

Date Released

2012 Jan

Guideline Developer(s)

American Diabetes Association - Professional Association

Source(s) of Funding

American Diabetes Association

Guideline Committee

American Diabetes Association National Camp and Youth Subcommittee

Composition of Group That Authored the Guideline

Primary Author: Lowell Schmeltz, MD, with contribution from Russ Kolski, RN (*Chair*), and other members of the American Diabetes Association National Camp and Youth Subcommittee

Financial Disclosures/Conflicts of Interest

Not stated

Guideline Status

This is the current release of the guideline.

Guideline Availability

Electronic copies: Available from the Diabetes Care Journal Web site .

Print copies: Available from the American Diabetes Association, 1701 North Beauregard Street, Alexandria, VA 22311.

Availability of Companion Documents

The following are available:

- Introduction. Diabetes Care 2012 Jan;35(Suppl 1):S1-S2.
- Diagnosis and classification of diabetes mellitus. Diabetes Care 2012 Jan;35(Suppl 1):S64-S71.

Electronic copies: Available from the Diabetes Care Journal Web site .

Print copies: Available from the American Diabetes Association, 1701 North Beauregard Street, Alexandria, VA 22311.

Patient Resources

None available

NGC Status

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